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1.1 LOCATION OF HOMER HADLEY BRIDGE

The Homer Hadley Bridge No. 90/25N spans Lake Washington from the center of Seattle to Mercer Island, Washington. The bridge is controlled and monitored from the Mercer Island Bridge Shop (MIBS) located beneath the approach structure on Mercer Island. Figures 1.1, 1.2, and 1.3 show the bridge in plan and elevation.

1.2 PURPOSE OF MANUAL

This manual provides operation, inspection, and preventative maintenance guidelines and procedures including trouble shooting and corrective actions.

1.3 SCOPE OF THE MANUAL

This manual is divided into 8 primary sections and an appendix. In brief, each section provides the following information:

Section 1	This section provides a brief overview of the OIM manual, figures showing the layout of the bridge, and inspection responsibilities for personnel and agencies involved in the bridge.
Section 2	Step-by-step procedures describing how to monitor the emergency warning equipment and operate bridge lighting.
Section 3	Step-by-step procedures for the inspection and maintenance of the bridge's structural equipment. Included are the location of the equipment and number of units, as well as inspection and maintenance frequencies.
Section 4	Step-by-step procedures for the inspection and maintenance of the bridge's mechanical and electrical equipment. Included are the location of the equipment and number of units, as well as maintenance frequencies.
Section 5	Photos of items identified in Sections 3 and 4.
Section 6	Inspection and maintenance forms.
Section 7	Emergency contact procedures and phone numbers.
Section 8	Emergency Response.
Appendix	Floating Bridge Rapid Response Damage Control Team Publication.

1.4 OVERVIEW OF THE BRIDGE

The Homer Hadley Bridge is one of four floating bridges constructed in the State of Washington. The bridge opened in 1989 and transports mainline westbound I-90 traffic and a High Occupancy Vehicle (HOV) lane that alternates between eastbound and westbound traffic. The bridge is sometimes referred to as the Third Lake Washington Bridge.

There is a parallel bridge 60 feet south of the Homer Hadley Bridge, which carries the eastbound traffic. This is the Lacey V. Murrow Bridge No. 90/25S.

The floating portion of the Homer Hadley Bridge consists of 18 prestressed concrete pontoons, which form a 5,811 ft. long structure. A single transition span at both the east and west ends connects the floating portion to the fixed approach spans.

Channels at both ends of the bridge allow boats to pass under the fixed spans. On the west end, the channel width is 190 ft., the maximum vertical clearance is 36 ft., and the minimum vertical clearance is 28 ft. On the east end, the channel width is also 190 ft., the minimum vertical clearance is 28 ft, and the maximum vertical clearance is 38 ft.

At the end of Section 1, Figure 1.1 shows the Homer Hadley Bridge in plan and elevation. Figure 1.2 is a view of the bridge's elevated spans with pier locations. Figure 1.3 shows the bridge in plan and elevation, and also provides anchor cable information. Figure 1.4 is a table containing the anchor cable information as well as the history of the anchor cable replacement.

1.5 OPERATIONAL RESPONSIBILITIES

1.5.1 Bridge Preservation Office

The WSDOT Bridge and Structures Office, Bridge Preservation Office in Olympia maintains a complete file on the Homer Hadley Bridge, including historical and current information. Engineers from this office will provide electrical, mechanical, structural, and other miscellaneous assistance as requested.

1.5.2 Mercer Island Bridge Crew

The Mercer Island Bridge Crew has primary operational responsibility for the Homer Hadley Bridge. It also programs and budgets for preventative and corrective maintenance for rehabilitation or replacement of bridge components.

The Mercer Island Bridge Crew erects and maintains signing for traffic restrictions. It provides traffic control during structural inspections and advises the Bridge and Structures Office of any damage to the bridge caused by vehicle or ship collisions, or by natural phenomena.

1.5.3 Traffic Systems Management Center (TSMC)

The Traffic Systems Management Center (TSMC) in Seattle provides technical input into the management of traffic on and around the bridges in the Greater Seattle area. This includes monitoring temporary lane closures during construction, inspections, maintenance, and emergencies. In addition, TSMC has the responsibility to:

1. Provide radio dispatch for the Region.
2. Alert the media and public of traffic congestion, and alternate routes.
3. Monitor the weather conditions on Lake Washington.
4. Respond to call alarms from the water sensor alarms on the floating bridges.
5. Respond to call alarms from the temperature sensor and smoke detector alarms on the floating bridges.
6. Communicate with the Region Bridge personnel, Washington State Patrol and other emergency response agencies.

The TSMC office is electronically linked to the sensors mentioned in items 4 and 5 above. If a sensor indicator is activated, TSMC will receive phone call alarms, and will contact Region Bridge personnel. Additionally, TSMC is directly connected to the internal communication system located in each pontoon, making it possible to speak by intercom from a pontoon directly to the TSMC office.

1.6 INSPECTION RESPONSIBILITIES

Inspection responsibilities are assigned by the Washington State Department of Transportation (WSDOT) manual M23-11 *“Transportation Structures Preservation Manual”*.

1.6.1 Bridge Preservation Office

The Bridge Preservation Office is responsible for the following inspections: routine and in-depth structural inspections, routine and in-depth electrical inspections, and underwater inspections. All of the inspection reports are on file at the Bridge Preservation Office.

1.6.1.1 Routine Structural Inspections - Annual

Inspections are conducted to assess the condition of the structural components of the bridge. These inspections are conducted in accordance with the National Bridge Inspection Standards (NBIS). Findings are documented and recommendations regarding repairs forwarded to the Region as required by the NBIS.

1.6.1.2 Fracture Critical and Under Bridge Inspection Truck Inspections – Two Years

Failure Critical (FC) and Under Bridge Inspection Truck (UBIT) inspections are also conducted in accordance with the NBIS. Findings are documented and recommendations regarding repairs forwarded to the Region as required by the NBIS.

1.6.1.3 Pontoon Water-Tight Inspections – Annual

Pontoon Water-Tight inspections are conducted in accordance with the Blue Ribbon Committee recommendations.

1.6.1.4 Routine Electrical Inspections - Annual

Routine electrical inspections assess the operational reliability of the electrical systems. Specific components of the systems are visually inspected, often with assistance from Mercer Island Bridge Crew. Findings are documented and recommendations regarding repairs are forwarded to the Region.

1.6.1.5 Blue Ribbon Electrical Inspections – Two Years

Random electrical inspections are conducted in accordance with the Blue Ribbon Committee recommendations.

1.6.1.6 In-Depth Electrical Inspections - Six Years

In-depth electrical inspections include operational testing of all electrical components and insulation resistance of incoming service cables and other randomly chosen conductors. The results of the inspections are used to identify preventative maintenance activities and to develop required rehabilitation projects.

A Professional Washington State Licensed Electrical Engineer must perform electrical inspections. Inspection reports completed by those other than WSDOT engineers are signed and sealed by the responsible

engineer. The reports are reviewed by the Bridge Preservation Office and forwarded to the Region Maintenance Engineer. The Bridge Preservation Office and the Region Maintenance Engineer retain final copies of the report.

The inspection reports include: identification of deficiencies, recommended actions to correct deficiencies, and cost estimates to complete recommended actions. The recommended actions are divided into three categories:

1. Maintenance Recommendations
2. Rehabilitation Recommendations
3. Emergency Repair Recommendations

The Bridge Preservation Office shall coordinate the implementation of the recommended action items with the Region Maintenance staff. Together they will decide which items maintenance forces will accomplish and which shall be accomplished by contract.

1.6.1.7 Underwater Pontoon and Cable Inspection – Two years

Underwater pontoon and cable inspections will include a visual inspection to monitor the condition of the underwater portions of the pontoons and anchor cables.

1.6.1.8 Underwater Inspection – Five Years

Underwater inspections include a visual inspection to qualify and monitor scour around the bridge piers and fender system. This inspection also requires a condition inspection of all underwater structural elements used to support or protect the bridge's approach spans.

1.6.2 Mercer Island Bridge Crew

The Mercer Island Bridge Crew is responsible for performing maintenance inspections. The maintenance inspection procedures are outlined in Sections 3 and 4.

1.6.3 Special Inspections Due to Storms or Earthquakes

Special inspections are conducted by the Mercer Island Bridge Crew after major storms or earthquakes. If damage is found, the Mercer Island Bridge Crew notifies the Bridge and Structures Office, which then investigates the damage further.

1.7 MAINTENANCE RESPONSIBILITIES

Maintenance responsibilities are assigned by the Washington State Department of Transportation (WSDOT) manual M23-11 *“Transportation Structures Preservation Manual”*.

The maintenance responsibilities as outlined in Sections 3 and 4 have been assigned as follows:

1.7.1 Bridge Preservation Office

The Bridge Preservation Office provides technical engineering support for maintenance and repair of the Homer Hadley Bridge. It also maintains a historical file of each bridge within its authority.

1.7.2 Mercer Island Bridge Crew

The Mercer Island Bridge Crew has primary operational responsibility for performing the preventative and corrective maintenance for the Homer Hadley Bridge, including performing the maintenance tasks identified in Sections 3 and 4 of this manual. The Mercer Island Bridge Crew shall inform the Bridge Preservation Office promptly of mechanical or electrical failure, misoperation, or bridge damage.

1.8 INSPECTION ACCESS

Access to inspection areas is generally arranged by the Mercer Island Bridge Crew. In the event that an inspection will require lane closures, the Mercer Island Bridge Crew will arrange for the closure through TSMC. Temporary lane closures may be required for pontoon interior inspections, roadway inspections, and superstructure inspection of the elevated structure.

1.9 PERSONNEL SAFETY

Follow all safety procedures as outlined by WSDOT. All work should be performed in a manner that protects the health and safety of the workers. However, it must be understood by all personnel that inspection and maintenance operations on the bridge involve some unavoidable risks, including:

- ☐ Working adjacent to fast moving traffic
- ☐ Inspection and maintenance performed from boats
- ☐ Entering the interior of the pontoons on a regular basis
- ☐ Working with various chemicals in poorly ventilated areas
- ☐ Maintenance of electrical components
- ☐ Emergency work during storms
- ☐ Changes in environment

Pontoons are non-permitted confined spaces. The WSDOT Safety Office recommends that personnel carry gas monitors when inside the pontoons. Any change to the environment causes the spaces to become 'permitted' confined spaces and gas monitors are required. See Appendix A and Appendix B for requirements.

The Superintendent in charge of maintenance is responsible for ensuring that a definite policy addressing safety standards is developed and adhered to by all personnel.

1.10 REVISIONS TO MANUAL

If at any time there is a request for revisions to this manual, complete the form (page 1-7) titled "REVISIONS TO THE OIM MANUAL FOR HOMER HADLEY BRIDGE NO. 90/25N". Send the completed form to the Bridge Preservation Office at the mailing address shown on the form. The Bridge Preservation Office is responsible for reviewing and implementing requested changes.